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Tsunami early warning system for the western coast of the Black Sea

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The Black Sea area is liable to tsunamis generation and the statistics show that more than twenty tsunamis have been observed in the past. The last tsunami was observed on 31st of March 1901 in the western part of the Black Sea, in the Shabla area. An earthquake of magnitude generated at a depth of 15 km below the sea level , triggered tsunami waves of 5 m height and material losses as well. The oldest tsunami ever recorded close to the Romanian shore-line dates from year 104.

This paper emphasises the participation of The National Institute for Earth Physics (NIEP) to the development of a tsunami warning system for the western cost of the Black Sea. In collaboration with the National Institute for Marine Geology and Geoecology (GeoEcoMar), the Institute of Oceanology and the Geological Institute, the last two belonging to the Bulgarian Academy of Science, NIEP has participated as partner, to the cross-border project “Set-up and implementation of key core components of a regional early-warning system for marine geohazards of risk to the Romanian-Bulgarian Black Sea coastal area - MARINEGEOHAZARDS”, coordinated by GeoEcoMar. The main purpose of the project was the implementation of an integrated early-warning system accompanied by a common decision-support tool, and enhancement of regional technical capability, for the adequate detection, assessment, forecasting and rapid notification of natural marine geohazards for the Romanian-Bulgarian Black Sea cross-border area.

In the last years, NIEP has increased its interest on the marine related hazards, such as tsunamis and, in collaboration with other institutions of Romania, is acting to strengthen the cooperation and data exchanges with institutions from the Black Sea surrounding countries which already have tsunami monitoring infrastructures.

In this respect, NIEP has developed a coastal network for marine seismicity, by installing three new seismic stations in the coastal area of the Black Sea, Sea Level Sensors, Radar and Pressure sensors, Meteorological and GNSS stations at every site, providing tide gauges and seismic data exchange with the Black Sea countries.

At the same time, the Tsunami Analysis Tool (TAT) software, for inundation modelling, along with it’s RedPhone application, were also installed at the National Data Centre in Magurele city, and also at Dobrogea Seismic Observatory in the city of Eforie Nord, close to the Black Sea shore.